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IS 12433-1 (1988): Basic requirements for hospital planning, Part 1: upto 30 bedded hospitals [MHD 18: Imaging and Radiotherapy Equipment]



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“Knowledge is such a treasure which cannot be stolen”

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Indian Standard

**BASIC REQUIREMENTS FOR
HOSPITAL PLANNING**

PART 1 UP TO 30 BEDDED HOSPITAL

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

AMENDMENT NO.1 MAY 1992
TO
IS 12433 (Part 1) : 1988 BASIC REQUIREMENTS FOR
HOSPITAL PLANNING

PART 1 UP TO 30 BEDDED HOSPITAL

(*Page 3, clause 4.1*) — Substitute the following for the existing clause:

'The total area to be provided for a hospital complex shall depend on the availability of land and it should be according to the requirements of the national building code/local byelaws.'

[*Page 13, clause 9.1 (G-1.)*] — Insert the following at the end:

'Audio-visual equipment (optional) —

Personal computer and printer (optional) —

(*Page 14, clause 10.4*) — Substitute the following for the existing clause:

'The architectural finishes in hospitals shall be of such quality which will help in maintenance of better hygienic condition.'

(*Page 18, clause 15.5.1, line 4*) — Insert the word 'lead' between the words 'electrical' and 'requirement'.

(MHD 18)

AMENDMENT NO. 2 JANUARY 1994
TO
IS 12433 (Part 1) : 1988 BASIC REQUIREMENTS FOR
HOSPITAL PLANNING
PART 1 UP TO 30 BEDDED HOSPITAL

(*Page 1, Foreword*) — Insert the following new clause after 0.8

'0.9 Certain items in this standard have been indicated as optional. These items are considered desirable for optimum functioning of the hospital. However, in consideration of unfavourable logistics and non-availability of skilled manpower for providing them in the initial stages of hospital development, these have been indicated as optional.'

(MHD 18)

Printed at Simco Printing Press, Delhi, India

*Indian Standard***BASIC REQUIREMENTS FOR
HOSPITAL PLANNING****PART 1 UP TO 30 BEDDED HOSPITAL****0. FOREWORD**

0.1 This Indian Standard (Part 1) was adopted by the Bureau of Indian Standards on 20 July 1988, after the draft finalized by the Hospital Planning Sectional Committee had been approved by the Consumer Products and Medical Instruments Division Council

0.2 The Government of India is the signatory to the Alma Ata declaration to achieve the objective of health for all by the year 2 000 A D. The country at present has nearly 7 000 hospitals with over 500 000 beds with a bed population ratio of 0.7 bed per 1 000 population. This bed complement is inadequate and inequitably distributed and even inefficient. National Health Policy (1983) has laid guidelines towards comprehensive and integrated approach to development and strengthening of national health care infrastructure. Primary health care has been adopted as the principal instrument of action.

0.3 In order to accomplish the above objective, therefore, it will be necessary to strengthen the existing health care infrastructure and make it more efficient and responsive to the health needs and priorities of our country.

0.4 This standard comprises the following sections describing five fundamental aspects of hospital planning, namely

- Section 1 Functional programme
- Section 2 Functional and space requirements
- Section 3 Manpower requirements
- Section 4 Instruments and equipment
- Section 5 Building requirements

0.5 It is envisaged that the above requirements will not only serve as guidelines for planning of 30 bedded hospitals but also will form the basis of further development in the field to structure specific building standards for hospitals with higher

degree of specialization and larger bed complements

0.6 While preparing this standard, assistance has been derived from the following

Report of the hospital equipment standardization committee, issued by the Directorate General of Health Services, Government of India (popularly known as 'Bajaj Committee Report' 1980)

Guide to Staffing Pattern for Hospitals, issued by the National Institute of Health & Family Welfare, Government of India

Delhi Nursing Home Registration (1953) Act and Amendment to Rules (1965), issued by the Delhi Administration

0.6.1 Assistance has also been derived from Project report on hospital planning prepared by Dr A K Nagpal, Managing Partner of Hospital Designs and Systems, New Delhi

0.7 This standard covers requirements mainly for 30 bedded hospital meant for community health centres. However, a suitable scope has been provided for further expansion.

0.8 The other parts of this Indian Standard which will be published in due course are as follows

Basic Requirements for Hospital Planning

Part 2 Up to 100 bedded hospital

Part 3 Up to 250 bedded hospital

Part 4 Up to 500 bedded teaching hospital

Part 5 Up to 500 bedded non-teaching hospital

Part 6 Up to 750 bedded teaching hospital

Part 7 Up to 750 bedded non-teaching hospital

1. SCOPE

1.1 This standard (Part 1) covers basic requirements for planning a 30 bedded general hospital in respect to functional programme, functional and space requirements, work-flow analysis, manpower requirements, instruments and equipment. Certain essential requirements for building, services and environment have also been covered

1.2 It is envisaged that no single standard can meet the requirements of different regions in our country representing plains, islands and hilly terrains with diverse geo-climatic variations. However, attempt has been made in this standard to cover basic needs of a 30 bedded hospital which could be suitably adjusted to meet specific needs and priorities of a particular region or a community

SECTION 1 FUNCTIONAL PROGRAMME

2. FUNCTIONAL PROGRAMME

2.1 A 30 bedded hospital should have the following facilities grouped as under

<i>Code</i>	<i>Nomenclature</i>	<i>Including</i>	<i>Code</i>	<i>Nomenclature</i>	<i>Including</i>
Group 1 : Medical and Allied Disciplines			3 47	Medical social work (optional)	
1 01	Anaesthesiology		3 50	Nursing services	
1 13	Community medicine	Preventive and social medicine	3 55	Operating theatre technology (optional)	Anaesthesia technology
1 14.1	Emergency medicine		3 60	Ophthalmology	
1 15	Dentistry (optional)		3 90	Sterilization and disinfection technology	CSSD technology
1 29	General medicine	Internal medicine	Group 4 : Engineering and Allied Services		
1 30	General surgery		4 05	Building maintenance	
1 64	Obstetric and gynaecology		4 10	Electric supply	Power generation and stabilization
1 72	Pediatrics		4 15	Fire protection	Alarm system
1 74	Pathology (optional)		4 25	Horticulture (optional)	Landscaping
1 88	Radio diagnosis	Radiology	4 35	LPG supply (optional)	
Group 2 : Health and Allied Services			4 40	Mechanical transport	Ambulance service
2 20	Family welfare		4 45	Medical gases supply and vacuum	Gas scavenging
2 25	Health education		4 47	Refrigeration	
2 45	Maternal and child health		4 50	Sewage treatment and disposal (where required)	Sanitation and drainage
2 50	Nutrition		4 52	Solar energy (optional)	
2 70	School health		4 55	Solid waste disposal	Incineration
Group 3 : Nursing Paramedical and Allied Services			4 60	Telephone and communication	
3 05	Dental technology (optional)	Dental hygiene (optional)	4 65	Water treatment and supply (where required)	Plumbing
3 10	Dietetics and therapeutics (optional)	Catering (optional)	4 70	Workshop (optional)	
3 15	Drugs and pharmacy		Group 5 : Administrative and Ancillary Services		
3 20	ECG technology		5 05	Audio-visual service	Field publicity
3 30.1	X-ray imaging		5 35	General administration	
3 30.2	Ultrasound imaging		5 40	House keeping	
3 35	Laboratory technology		5 45	Library	
3 40	Laundry technology (optional)		5 55	Materials management	Inventory control
3 45	Medical record technology		5 75	Security	

SECTION 2 FUNCTIONAL AND SPACE REQUIREMENTS

3. GENERAL

3.1 This section covers functional and space requirements for a 30 bedded hospital. The hospital building shall be divided according to the functions described in Section 1. A typical work flow analysis is given in Fig 1. The buildings requirements are covered in Section 5 of this standard.

4. TOTAL AREA

4.1 The total area to be provided for a hospital complex shall depend on the availability of land.

However, for guidance an area of 1 acre or more has been recommended for 30 bedded hospital.

5. SITE PLANNING

5.1 Hospital sites which are prone to outside noise should be avoided, but these may still be considered in view of other considerations, such as accessibility and availability of services. The building should be so planned that sensitive areas, such as wards, consulting and treatment rooms and operation theatres are placed away from the outdoor source of noise. While planning the hospital building, the importance of landscape

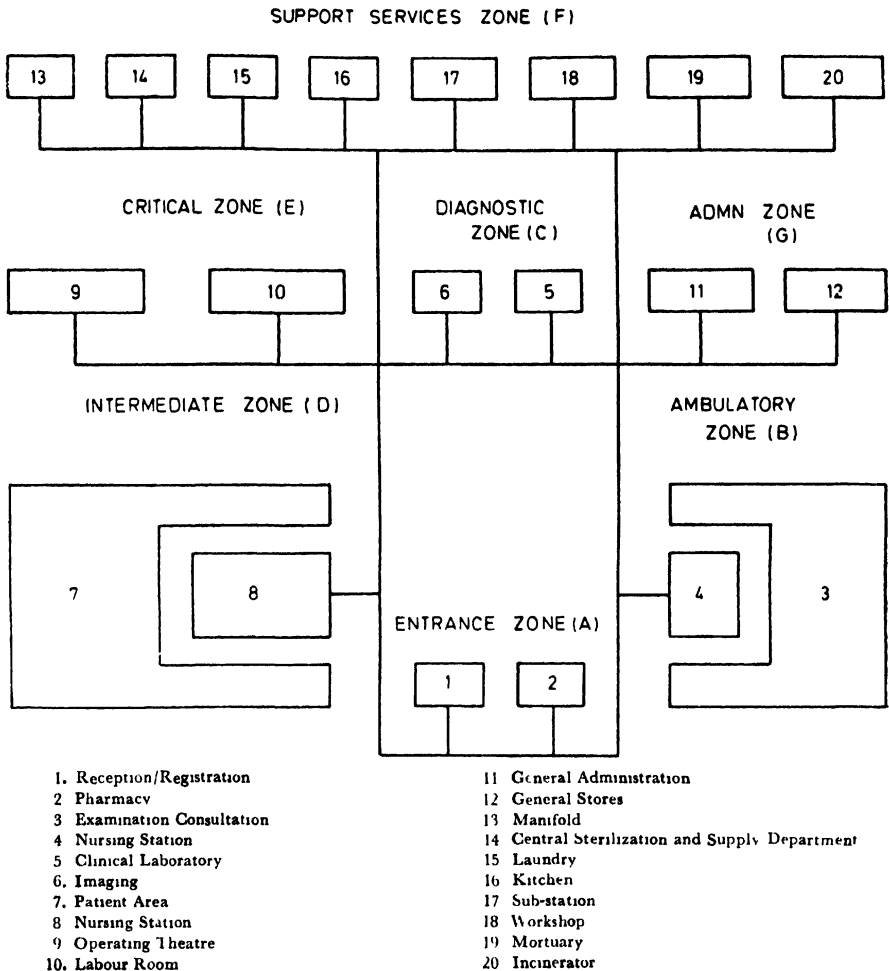


FIG. 1 WORKFLOW ANALYSIS, 30 BEDDED HOSPITAL

elements, such as open areas, horticulture to increase the comfort conditions inside the building and also in the surrounding environment should be kept in view. Orientation of building shall conform to provisions and recommendations contained in IS 7662 (Part 1)-1974*

6. RESIDENTIAL ACCOMMODATION

6.1 If adequate land is not available, residential accommodation for essential staff only, which may include resident medical officer, nurses and assisting staff, should be provided.

6.2 For the relatives of patients some accommodation like shelter/home may be provided

6.3 Residential accommodation for a major portion of nursing staff should be provided close to the hospital block in the form of a hostel.

7. FUNCTIONAL AND SPACE REQUIREMENTS

7.1 The recommended functional and space requirement for various functions shall be as given in Table 1 (see also Fig 1)

*Recommendations for orientation of buildings Part I Non-industrial buildings

TABLE 1 FUNCTIONAL AND SPACE REQUIREMENT FOR 30-BEDDED HOSPITAL
(Clause 7.1)

ZONE	FUNCTIONS	AREA PER BED IN m ²	TOTAL AREA m ²
(1)	(2)	(3)	(4)
Entrance zone (A)	Reception & Registration — Reception counter — Record storage Pharmacy — Issue counter — Formulations — Drugs storage Public utilities Circulation space	2	60
Ambulatory zone (OPD) (B)	Examination & workup — Examination room — Sub-waiting Consultation — Consultation rooms — Toilets — Sub-waiting Nursing station — Nurses desk — Clean utility — Dirty utility — Treatment rooms — Injection and dressing — ECG — Sub-waiting Casualty/Emergency Public utilities Circulation space	10	300

TABLE 1 FUNCTIONAL AND SPACE REQUIREMENT FOR 30-BEDDED HOSPITAL — Contd

ZONE	FUNCTIONS	AREA PER BED IN m ²	TOTAL AREA m ²
(1)	(2)	(3)	(4)
Diagnostic zone (C)	Pathology (optional) — Laboratory — Sample collection — Bleeding room — Washing/disinfection — Storage — Sub-waiting Imaging (radiology, radiography, ultra-sound) — Preparation — Change — Toilet — Control — Dark room (film developing & processing) — Treatment room — Sub-waiting Public utilities Circulation space	6	180
Intermediate zone (inpatient nursing units) (D)	Nursing station — Nurses desk — Clean utility — Treatment room — Pantry — Store — Sluice room — Trolley bay Patient area — Bed space — Toilets — Day space — Isolation Ancillary rooms — Doctor's rest room — Nurses duty room Public utilities Circulation space	25	750
Critical zone (operation theatre/labour room) (E)	Patient area — Preparation — Pre anaesthesia — Post operative resting Staff area — Changing — Resting Supplies area — Trolley bay — Equipment storage — Sterile storage O T/L R area — Operating/labour room — Scrub and gown — Instrument sterilization — Disposal Public utilities Circulation space	8	240

(Continued)

(Continued)

TABLE 1 FUNCTIONAL AND SPACE REQUIREMENTS FOR 30 BEDDED HOSPITAL — Contd

ZONE	FUNCTIONS	AREA PER BED IN m ²	TOTAL AREA m ²
(1)	(2)	(3)	(4)
Service zone (F)		7	210
	Dietary		
	—Dry store		
	—Day store		
	—Preparation		
	—Cooking		
	—Delivery		
	—Pot wash		
	—Utensil wash		
	—Utensil store		
	—Trolley park		
	C S S D		
	—Receipt		
	—Wash		
	—Assembly		
	—Sterilization		
	—Sterile storage		
	—Issue		
	Laundry		
	—Receipt		
	—Weigh		
	—Sluice/Wash		
	—Hydro extraction		
	—Tumble		
	—Calender		
	—Press		

(Continued)

TABLE 1 FUNCTIONAL AND SPACE REQUIREMENTS FOR 30-BEDDED HOSPITAL — Contd

ZONE	FUNCTIONS	AREA PER BED IN m ²	TOTAL AREA m ²
(1)	(2)	(3)	(4)
	Laundry		
	—Clean storage		
	—Issue		
	Civil engineering		
	—Building maintenance		
	—Horticulture		
	—Water supply		
	—Drainage and sanitation		
	Electrical engineering		
	—Sub-station and genera- tion		
	—Illumination		
	—Ventilation		
	Mechanical engineering		
	—Air-conditioning		
	—Refrigeration		
	Other services		
	—Gas supply		
	—Telephone and intercom		
	—Fire protection		
	—Waste disposal		
	—Mortuary		
Administrative zone (G)		2	60
	General administration		
	General stores		
	Public utilities		
	Circulation space		
	TOTAL	60	1 800

SECTION 3 MANPOWER REQUIREMENT**8. MANPOWER REQUIREMENT**

8.1 In the beginning when the hospital starts working, it is recommended that the total strength should be based on two persons per bed but should increase to three persons per bed when the hospital is working to its full load capacity. Given below is the recommended strength

	Min
8.1.1 Medical Staff	
General medicine	1
General surgery	1
Obstetrics and Gynaecology	1
Paediatrics	1
Anaesthesiology	1
Dentist (optional)	1
Pathologist (optional)	—
Radiologist (optional)	—
General duty medical officers	3
Community medicine	1
8.1.2 Health Staff	
Female health assistant	1
Extension educator	1
Nutritionist	—
Public health nurse	—

	Min
8.1.3 Nursing Staff	
Matron	1
Operating theatre nurse	1
Labour room nurse	1
General nurse	7
Nursing aids	7
8.1.4 Para-medical Staff	
Pharmacist/Asst Pharmacist	1
Dietician/Asst dietician (optional)	—
Technologist/Technician ECG (optional)	1
Technologist/Technical imaging	1
Technologist/Clinical pathology	1
Haematology/Blood Bank	
Technologist/Laundry (optional)	1
Technologist/Medical records	1
Technologist/C S S D	1
Technical aids	5
Technologist, Ophthalmology	1
Technologist, Dental	1

8.1.5 Engineering Staff	
Technologist/Technician, Elec	1
Technologist/Mechanical/Plumbing	1
Engineering aides	2

	Min		Min
8.1.6 Administrative and Ancillary Staff		General attendants	2
Stenographer	1	Security attendants	4
Storekeeper	1	Sanitary attendants	5
Administration assistant	1		
Telephone operator/Telex operator	1		
Driver	1		
		Grand Total	63

SECTION 4 INSTRUMENTS AND EQUIPMENT

9. INSTRUMENTS AND EQUIPMENT

9.1 The instruments and equipment required by various departments are as follows. These may conform to the relevant Indian standards indicated against each item. However, the number of these equipments shall be governed by the actual local conditions.

A ENTRANCE ZONE

A-1 RECEPTION AND REGISTRATION

Chair, metal, office type	IS 3499 (Part 1)-1985
Chairs, plastic moulded	—
Fire fighting equipment — As per requirements of statutory bodies	—
Graphics and signature systems — Audio-visual display	—
Janitor's equipment	—
— Floor scrubbers	—
— Brooms	—
— Dusters, etc	—
Notice board	—
Reception, registration desk/counter	—
Table, metal, office/Counter	IS 3448-1983
Trolley, patients	IS 4036-1967
Water cooler with 3/4 spouts	IS 1475-1978
	{ IS 6571-1972
Wheel chairs	{ IS 7454-1974
	{ IS 8086-1976

A-2 PHARMACY

Chairs, metal, office type	IS 3499 (Part 1)-1985
Jugs for water, tumblers	IS 3424-1985
Refrigerator	{ IS 1474-1959
	{ IS 1476-1979
Sink unit with desk top work area	—
Storage racks	{ IS 1883-1983
	{ IS 7070-1973
Table, metal, office type	IS 3498-1983
Wash basin	IS 2556
	(Part 4)-1972

B AMBULATORY ZONE

B-1 EXAMINATION/CONSULTATION

Bedsheet	IS 175-1979
Bowls	IS 3594-1980
Chair, metal, office type	IS 3499 (Part 1)-1985
Chairs, plastic moulded	—
Doctor's towel	IS 7057-1973
Dusters	{ IS 859-1978
	{ IS 3777-1966
Diagnostic set (as per the clinics requirements)	—
a) Ophthalmoscope	IS 8257-1976
b) ENT speculum	{ IS 3788-1966
	{ IS 5377-1969
c) Torch (flashlights)	IS 2083-1978
d) Laryngoscope and auroscope	IS 4113-1967
e) Tongue depressor	IS 7756-1975
Examination table/stretchers with mattress	{ IS 4035-1967
	{ IS 4037-1967
	{ IS 4787-1968
Kidney trays	IS 3992-1982
Screen stands	IS 4458-1982
Step stool	—
Sphygmomanometer	{ IS 3390-1977
	{ IS 7652-1975
Stethoscope	IS 3391-1965
Stool, revolving	IS 7081-1973
Wash basin with liquid soap dispenser and towel rail	IS 2556 (Part 4)-1972
X ray viewers	—

B-2 NURSING STATION

Chair, metal, office type	IS 3499 (Part 1)-1979
Dressing drum	IS 3831-1979
Fire fighting equipment (as per statutory requirements)	—
Hot plates	IS 365-1983
Nurses station counter/desk	—
Notice boards	—
Refrigerator	{ IS 1474-1954
	{ IS 1476-1979
Screen stands	IS 4458-1967

Sink unit with instrument work area	IS 2556 (Part 5)-1979	Pulp tester	—
Stool, revolving	IS 7081-1973	Scalers assorted	IS 4714-1985
Storage units — storage racks	{ IS 1883-1983 IS 7070-1973	Scalers set sub-lingival	—
Table, metal, office type	{ IS 3498-1983 IS 8126-1976	Scalers ultrasonic	—
Trolley, dressing/instruments/medicine	{ IS 4769-1968 IS 5631 1970 IS 7083-1975	Sterilizers	{ IS 3829 (Part 1)-1978 IS 3829 (Part 2)-1978 IS 3829 (Part 3)-1985 IS 5022-1979 IS 8462-1977
Trolley patients	IS 4036-1967	Suction apparatus	IS 4533-1978
Wall clocks	IS 5160-1969	Table, office	IS 3498-1983
Waste receptacles	IS 6904-1973	Tray complete sets for edentulous and dentulous jaws (perforated)	IS 9717-1980
Wash basin with liquid soap dispenser and towel rail	IS 2556 (Part 4)-1972	Trolley, patients	IS 4036-1967
Water cooler	IS 1475-1978	Wall clock	IS 5160-1969
Washing machines	IS 6390-1983	Wheel chair	{ IS 6571-1972 IS 7454 1974 IS 8086-1976
Wheel chairs	{ IS 6571-1972 IS 7454-1974 IS 8086-1976	Wiring set for jaw fractures	—
X-ray viewers	—		
B-3 DENTAL EQUIPMENT AND INSTRUMENTS (OPTIONAL)		C DIAGNOSTIC ZONE	
Air motor	—	C-1 CLINICAL LABORATORY	
Air turbine	IS 6846-1972	C-1.1 LABORATORY EQUIPMENT AND INSTRUMENTS	
Air viva	—	Haemoglobinometer, Sahli, complete	IS 9430-1980
Biopsy kit	—	Blood and urine examination instruments	—
Chair, dental	IS 6116-1971	Tubes, glass for pathological work	IS : 3740-1966
Chair, metal, office use	IS 3499 (Part 1)-1985	Tubes, sedimentation	IS 3741-1980
Chair, revolving	IS 3499 (Part 2)-1985	Pipettes, dilution for haemocytometers	IS 3742-1980
Dental unit, complete	IS 5023-1969	Pipettes for haemoglobinometers and blood pipettes for biochemical work	IS 4087 1980
Dental X-ray unit and developing facilities	—	Pipettes serological	IS 4364-1967
Desk for reception counter	—	Albuminometer (Esbach's)	IS 6606 1972
Dressing drum	IS 3831-1979	Albifith stopper, stand and case	—
Excavators	IS 4715-1968	Cover, glass, haemocytometer	IS 6943-1973
Extraction forceps	See Appendix 'A'	Tube culture, screw cap	IS 7039-1973
Filling instrument set	—	Tube haemocytometer	IS 9430-1980
Handpiece straight and contra angle	—	Blood sedimentation rate stand for 6/12 tubes	—
Minor surgery instruments	—	Test tubes	IS 2618-1980
Oxygen cylinder, trolley, gas	{ IS 309-1974 IS 6207-1971 IS 8198 (Part 12)-1982	Volumetric flasks	IS 915-1975
Perio-surgical instruments	—	Beaker	IS 2619-1971
Plastic filling instrument	{ IS 3890 (Part 1)-1986 IS 3890 (Part 2)-1967	Urine collection jar	—
Prosthetic laboratory and denture processing instruments	{ IS 10866 1984 IS 11044-1984 IS 11045-1934 IS 11317-1985	Glass slides	—
		Calorimeter	—
		Centrifuge AC/DC 200 W with 8 buckets	{ IS 4092-1981 IS 9578-1980
		Centrifuge tubes (glass)	IS 3740-1966

Laboratory electric ovens IS : 6365-1971
 Monocular microscope IS : 4328-1967
 Needle, hypodermic, all sizes IS : 3317-1983
 Needle, hypodermic, single use IS : 10654-1983
 Sterilizer, steam IS : 3829
 (Parts 1, 2
 and 3)-1985

Sterilizer, steam, portable IS : 8462-1977
 type
 Spirit lamp —
 Stop watch IS : 10996-1984
 Syringes, all glass, all sizes { IS : 3236-1980
 { IS : 11400-1985
 Syringes for single use IS : 10258-1982
 Water bath, serological IS : 6593-1972
 Wire gauze —
 Sink unit with worktop area IS : 2556
 (Part 5)-1979
 Wash basin with liquid soap IS : 2556
 dispenser and towel rail (Part 4)-1972

C-2. IMAGING

Aprons, lead rubber IS : 7352-1974
 Chemical mixing plunger —
 Cassettes with intensifying { IS : 6991-1973
 screens { IS : 10554-1985
 Chair, office type IS : 3499
 (Part 1)-1985
 Chair, plastic moulded —
 Diagnostic X-ray unit 200/ IS : 7620-1975
 300 mA with automatic
 device
 Diagnostic 60 mA X-ray —
 machine (portable) type
 Dark room safe light —
 Dark room timer —
 Dark room adaption goggles —
 Film clips —
 Film hanger and wall brackets —
 Hanger for X-ray film —
 Gloves, lead rubber —
 Lead numbers for marking —
 X-ray film
 Lead sheets —
 Magnifying glass IS : 5148-1969
 Multi-purpose ultra-sound —
 scanner
 Multi-probe ultra-sound —
 equipment on trolley
 Rack, steel IS : 1883-1983
 Step stools —
 Stool, revolving IS : 7081-1973
 IS : 2480
 Tank thermometer (Parts 1 and
 2)-1983
 Trolley, patients IS : 4036-1967
 Wash basins with towel IS : 2556 (Part
 rail/liquid soap dispenser 4)-1972
 X-ray view box —

X-ray protection screen { IS : 6994-1973
 { IS : 7064-1973
 { IS : 10554-1983
 X-ray film processing tank —
 X-ray film corner —

D. INTERMEDIATE ZONE

D-1. PATIENT AREA

Bedsteads (including 5 with IS : 5029-1979
 railing)
 Bed side lockers IS : 4266-1987
 Back rests IS : 5336-1969
 Bed, Fowler's IS : 7081-1973
 Bed pans —
 Buckets, stainless steel IS : 4768-1981
 Basins —
 Screen stands IS : 4458-1967
 Chairs, metal office type IS : 3499
 (Part 1)-1985
 Chairs, plastic moulded —
 Chairs, easy IS : 5974-1986
 Chamber pots —
 Chart holder —
 Diagnostic set :
 a) Ophthalmoscope IS : 8257-1976
 b) ENT speculum { IS : 3788-1966
 { IS : 5377-1969
 c) Torch (flashlight) IS : 2083-1978
 d) Percussion hammer —
 e) Laryngoscope and IS : 4113-1967
 auroscope
 f) Tongue depressor IS : 7756-1975
 Dressing drum IS : 3831-1979
 Enema can sets —
 Feeding cups with spout —
 Forceps Cheattles IS : 4094-1967
 Flit pumps IS : 3897-1978
 Fly swatters —
 Fire fighting equipment (as
 per statutory requirements)
 a) Buckets with stand —
 b) Fire extinguisher IS : 2878-1976
 Hurricane lantern { IS : 1238-1985
 { IS : 9557-1980
 Hot plates IS : 365-1983
 Hot water bottles IS : 1867-1975
 Holder, case, sheet —
 Ice box IS : 1869-1961
 Ice bags IS : 3867-1966
 Jugs, enamel —
 Kindney trays IS : 3992-1982
 Kettles IS : 367-1983
 Medicine cups IS : 3998-1982
 Medicine trolleys IS : 7083-1973
 Mugs IS : 3995-1980
 Mattresses for bedsteads IS : 7933-1975
 Notice boards IS : 10405-1982
 Oxygen cylinders with { IS : 309 -1974
 trolleys and flowmeters { IS : 6207-1971
 { IS : 5355-1978
 Oxygen masks

Photo therapy equipment

Refrigerators IS : 1476-1979
 Rack, storage { IS : 1833-1983
 IS : 7070-1973

Racks, test tube

Room heaters IS : 369-1983
 (radiators/convectors)

Screen stands

Step stool IS : 4458-1967

Stool, revolving

Spoons IS : 7081-1973

Suction apparatus IS : 990-1982

Sphygmomanometers IS : 4533-1978

{ IS : 3390-1977

{ IS : 7652-1975

Stethoscope IS : 3391-1965

Sterilizer instruments IS : 5022-1979

Scissors, general purpose IS : 989-1982

Spirit lamps —

Splints arm —

Splints, Thomas —

Table, metal, office type { IS : 3498-1983

{ IS : 8126-1976

Trolleys, linen and dirty linen IS : 4455-1967

Table, examination IS : 4787-1968

Tray, food (stainless steel) { IS : 3257-1980

{ IS : 3424-1980

Tumblers (stainless steel) IS : 3424-1980

Trolley, dressing IS : 4769-1968

Trolley, patients IS : 4036-1967

Thermometers, clinical IS : 3055

(Part 1)-1977

Thermometers, rectal —

Waste receptacle IS : 6904-1973

Wall clocks IS : 5160-1983

Water coolers with 3/4 spouts IS : 1475-1978

Weighing machines { IS : 2489-1963

{ IS : 1853-1961

X-ray view boxes —

Linen Furnishings**Bed sheets**

{ IS : 175 -1979

{ IS : 745 -1975

{ IS : 3776-1968

Blankets { IS : 855 -1979

{ IS : 856 -1971

Curtains —

Draw sheets —

Dusters { IS : 859 -1978

{ IS : 3777-1966

Doctor's cots IS : 5029-1979

Doctor towels IS : 7057-1973

Face sponges —

Mortuary sheets { IS : 175-1979

{ IS : 745-1975

IS : 7933-1975

Mattresses —

Mattress covers —

Pillows cases —

Patient coats or jackets —

Patient pyjama —

Pillows —

D-2. NURSING STATION**Chair, metal, office type**

IS : 3499

(Part 1)-1979

Dressing drum IS : 3831-1979

Fire fighting equipment (As

per statutory requirements) —

Hot plates IS : 365-1983

Nurses station counter/desk —

Notice boards —

Refrigerator { IS : 1476-1979

{ IS : 1474-1954

Screen stands IS : 4458-1967

Sink unit with instrument

work area IS : 2556

(Part 5)-1979

Stool, revolving IS : 7081-1973

Storage units — storage racks IS : 1883-1983

{ IS : 7070-1973

Table, metal, office type { IS : 3498-1983

{ IS : 8126-1976

Trolley, dressing/instruments/

medicine { IS : 4769-1968

{ IS : 5631-1970

{ IS : 7083-1975

Trolley, patients IS : 4036-1967

Wall clocks IS : 5160-1969

Waste receptacles IS : 6904-1973

Wash basin with liquid soap

dispenser and towel rail IS : 2556

(Part 4)-1972

Water cooler IS : 1475-1978

Washing machines IS : 6390-1983

{ IS : 8086-1976

{ IS : 6571-1972

{ IS : 7454-1974

Wheel chairs —

X-ray viewers —

E. CRITICAL ZONE**E-1. OPERATION THEATRE EQUIPMENTS**

Bowls, stainless steel IS : 3994-1980

Basin, stainless steel —

Brush, nail —

Buckets, stainless steel IS : 4768-1981

{ IS : 726-1972

Bucket with lid { IS : 3730-1966

{ IS : 4768-1981

Catheter, rubber IS : 7523-1974

Diathermy machine IS : 7583-1974

Dressing drum, all sizes,

stainless steel IS : 3831-1979

Lamps, shadowless:

a) ceiling lamp —

b) portable type —

Sink unit with work top area IS : 2556

(Part 5)-1979

Sterilizer:

a) Sterilizer hot and cold

water IS : 7454-1974

b) Bowls and utensils IS : 5035-1969

Suction apparatus IS : 4533-1978

Stand, I. V. IS : 5880-1970

Stool, revolving stainless steel	IS : 7081-1973
Stand with wheel for single basin	IS : 4267-1967
Slippers	—
Table, operation, hydraulic:	
a) Major	IS : 5291-1969
b) Minor	IS : 6106-1971
Table, instruments	IS : 6905-1973
Trolley, dressing drum	IS : 7099-1973
Trolley, patients	IS : 4036-1967
Trolley, instruments	IS : 5631-1970
Tube, Ryles	—
Urinals (male and female)	IS : 2556 (Part 6/Sec 4 to 6)-1974
X-Ray view box	—
Wheel chairs	{ IS : 6571-1972 IS : 7454-1974 IS : 8086-1976

E-2. LABOUR ROOM INSTRUMENTS AND EQUIPMENT

Aprons rubber	—
Wash-basin	IS : 2556 (Part 4)-1972
Bowl for placenta, stainless steel	—
Bed pans, stainless steel	—
Bowls, stainless steel	—
Can, douche	—
Catheter, rubber and metal	IS : 5680-1969
Cradles, baby	IS : 5630-1970
Chair, wheel	IS : 7454-1974 IS : 6751-1982 IS : 8086-1976 IS : 6877-1977
Cabinet, instruments	—
Craniotomy set	—
Dispensing measures	IS : 1160-1957
Dressing drum	IS : 3831-1979
Forceps:	
a) Artery	IS : 3644-1966
b) Obstetric, wringles	—
c) Obstetric, ferguson	—
d) Ovum	IS : 6578-1972
e) Sponge holding	IS : 7735-1975
f) Dissecting	IS : 3643-1966
g) Cheatles	IS : 4094-1967
Feeding cups	—
Fortuscope	—
Hot water bottles	IS : 1867-1975
Handle for surgical blades, Bard Parker type	IS : 3319-1985
Ice bags	IS : 3867-1966
Jug, stainless steel	IS : 3424-1985
Jar, ointment, with cover	IS : 3997-1982
Kidney tray, stainless steel	IS : 3992-1982
Laparoscope, single puncture	—
McIntoch	—
Mouth gag	IS : 7625-1975
Needle holder	IS : 7994-1976
Needle, lumbar puncture	IS : 7350-1974

Ophthalmoscope	IS : 8257-1976
Probe, uterine	{ IS : 7981 (Parts 4 and 5)-1976
Pint measures	—
Pelvic meter	—
Shadowless lamp	—
Sinks with liquid soap dispensers	IS : 2556 (Part 5)-1979
Suction apparatus	IS : 4533-1978
Sound, uterine	IS : 5829-1982
Stand:	
a) Basin	IS : 4267-1967
b) I. V.	IS : 5880-1970
c) Towel	—
d) Test tube	—
Stethoscope	IS : 3391-1965
Syringes, single use and reusable type	{ IS : 3236-1980 IS : 10258-1982 IS : 11400-1985

Slippers	—
Scissors:	
a) Bandage, Lister's	IS : 6252-1971
b) Stitch cutting	IS : 4513-1968
c) Episiotomy	IS : 7103-1973
d) Curved and straight	IS : 9146-1979
Speculum, Sim's	IS : 6112-1971
Step stool	—
Table:	
a) Obstetric, labour	IS : 6083-1971
b) Examination	IS : 4787-1968
Trolley:	
a) Patients	IS : 4036-1967
b) Dressing	IS : 4769-1968
Torch (flash light)	IS : 2083-1978
Trays	{ IS : 3992-1982 IS : 3993-1982
Tubes:	
a) Ryles	—
b) Foetus	—
Thermometer, rectal	IS : 3055 (Part 1)-1977
Tubs, baby bath	IS : 4120-1967
Urinals	IS : 2556 (Part 6/Sec 4 to 6)-1974
Vacuum extractor	—
Wash-basin	IS : 2556 (Part 4)-1972
Weighing machine, baby	IS : 2489-1963
Wheel chairs	IS : 6571-1972 IS : 7454-1974 IS : 8086-1976 IS : 2556 (Part 4)-1972
X-ray view box	—

E-3. ANAESTHESIA EQUIPMENT AND APPLIANCES

Airways, anaesthetic	IS : 3392-1965
Airways, Guedal, rubber	—
Boyles apparatus	—

Cylinders:

a) Oxygen gas/trolley/
cylinder { IS : 309-1974
IS : 6207-1971
IS : 8198
(Part 2)-1982

b) Nitrous oxide { IS : 8198
(Part 2)-1982

Catheter, oral, endotracheal —

Catheter, endotracheal, nasal —

Forceps endotracheal for
introducing endotracheal
tube IS : 8312-1977

Face masks IS : 6190-1971

Laryngoscope IS : 4113
(Part 1 and
2)-1986

Mouth gag, Mason IS : 7627-1975

Spray laryngeal, McIntoch
type IS : 7885-1975

Tube endotracheal IS : 6581-1972

F. SUPPORT SERVICES ZONE

F-1. KITCHEN EQUIPMENT

Bowl, wash IS : 3994-1980

Chair, steel, office type IS : 3499
(Part 1)-1979

Cans, 100 litre —

Clock IS : 5160-1969

Cooking range with oven IS : 4760-1979

Fryer (deep fat) IS : 10263-1982

Gas burners (domestic) IS : 4246-1984

Kitchen knife IS : 3546-1966

Plates for serving IS : 3258-1980

Potato peeler —

Rack for utensils —

Refrigerator { IS : 1476-1979
IS : 1474-1979

Sink units with work top IS : 2556
(Part 5)-1979

Spoons, stainless steel IS : 990-1982

Strainers —

Table with marble top —

Table office type { IS : 3498-1983
IS : 8126-1976

Trolley for hot food IS : 10264-1982

Table cloth IS : 858-1981

Tableware { IS : 1961-1968
IS : 9220-1979

Towels { IS : 855-1979
IS : 856-1971

Tumblers IS : 3424-1985

Trays, food IS : 3258-1980

Weighing machine IS : 1853-1961

F-2. CENTRAL STERILE ROOM SUPPLY

Buckets, stainless steel IS : 4768-1981

Basin, wash IS : 2556
(Part 4)-1972

Bowls, wash IS : 3994-1980

Bottles, wide mouth —

Brush, nail —

Chairs, office type IS : 3499
(Part 1)-1979

Catheter, rubber all sizes { IS : 7523-1974
IS : 5680-1969

Catheterisation sets —

Cans —

Cabinet, steel IS : 3312-1984

Cabinet instruments IS : 6877-1977

Dressing sets:

a) Suture needles IS : 10104
(Part 1)-1981

b) Artery forceps { IS : 3644-1966
IS : 3645-1966

c) Scalpel blades IS : 3319-1985

Funnel { IS : 1541-1978
IS : 10231-1982

Forceps:

a) Artery { IS : 3644-1966
IS : 3645-1966

b) Dissecting IS : 3643-1966

c) Allis IS : 7388-1974

Gloves IS : 4148-1967

Gloves box —

Handle for Bard Parker
blade IS : 3319-1985

Hypodermic needle:

a) Single use all sizes IS : 10654-1985

b) Reusable type all sizes IS : 3317-1983

Hand towel { IS : 855-1971
IS : 856-1971

Hypodermic syringes:

a) Single use all sizes IS : 10258-1982

b) Reusable type all sizes { IS : 3236-1980
IS : 11400-1985

I. V. sets (preferably single
use type) IS : 9824-1981

Irrigation sets:

a) Syringes IS : 3237
(Part 6)-1986

b) Catheter IS : 5680-1969

Kidney tray IS : 3992-1982

Medicine glass —

Lumber puncture sets —

Needle:

a) Spinal IS : 7350-1974

b) Sternal puncture —

c) Liver biopsy IS : 7387-1974

d) Aspirating —

e) Aneurysm IS : 8340-1977

f) Sharpener —

g) Holder { IS : 7994-1976
IS : 10599-1983
IS : 10615-1983

Proctoscopes —

Pint measure —

Sink units with work area tops IS : 2556
(Part 5)-1979

Sutich removing sets:

a) Forceps —

b) Scissors IS : 4513-1968

Sterilizer, steam (Autoclave) IS : 3829
(Parts 1, 2 and 3)

Sterilizer, hot air IS : 3119-1978

Scissors:

a) General type IS : 989-1982

b) Mayo's IS : 9146-1979

Sponge nylon —

Screws clamp —

Speculum

{ IS : 3788-1966
IS : 5377-1969
IS : 5906-1970
IS : 6112-1971

Suction apparatus IS : 4533-1978

Stop cock, three-way IS : 1996-1962

Rack, steel IS : 1883-1983

Tubes:

a) Foetus tube —

b) Stomach tubes —

c) Ryles tubes —

d) Tracheostomy IS : 8432-1977

Trays —

Towel clip IS : 7893-1975

Trocar cannula —

Trace dilators —

Trolley, closed and ordinary IS : 9133-1979

Table office type { IS : 3498-1983

{ IS : 8126-1976

Tracheostomy sets —

Venesection sets —

Wrapper —

Waste paper baskets —

EPISIOTOMY TRAY

Bowl, stainless steel IS : 3994-1980

Forceps dissecting IS : 3643-1966

Scissors episiotomy IS : 7103-1973

Sponge holder —

{ IS : 3236-1980
IS : 3317-1983
IS : 10258-1982
IS : 10654-1983
IS : 11400-1985

Syringes and needles

SUTURE TRAY

Forceps:

a) Dissecting IS : 3643-1966

b) Artery, mosquito type IS : 3644-1966

Needle, suture

IS : 10104
(Part 1)-1981

Needle holder

{ IS : 7994-1976
IS : 10599-1983
IS : 10615-1983

Syringe and needles, single use and reusable type

Scalpel with blade

Scissors, suture

Spinal sheet with hole

Tray with wrapper

Towel

{ IS : 3236-1980
IS : 10258-1982
IS : 11400-1985
IS : 3317-1983
IS : 10654-1983
IS : 3319-1985

{ IS : 855-1979
IS : 856-1971

BABY TRAY

Bowl, stainless steel

IS : 3994-1980

Forceps:

a) Dissecting

IS : 3643-1966

b) Artery

IS : 3644-1966

Kidney tray

IS : 3992-1982

Mucus suction with catheter

Scissors, cord cutting

IS : 7117-1973

Thread for cord tying

RESUSCITATION TRAY FOR NEW BORN BABIES

Mucus suckers

Ambu bag

Oxygen mask

Endotracheal tubes

Laryngoscope

IS : 5602-1970

IS : 6190-1971

IS : 6581-1972

IS : 4113

(Parts 1 and 2)-1986

Suction catheters

IS : 5680-1969

DELIVERY TRAY

Bowl for placenta

Catheter rubber plain

Forceps:

a) Artery

b) Bowel

Gynae sheet

Kidney tray

Sponge holding forceps

Table, obstetric, labour

Tray with wrapper

IS : 3644-1966

IS : 4135-1974

IS : 3992-1982

IS : 10638-1983

IS : 6083-1971

FORCEPS TRAY

Bowl, wash

Brain crusher

Forceps:

a) High with weight

b) Low

c) Vacuum

d) Artery

Gynae sheet

Kidney tray

Sponge holding

Scissors

IS : 3994-1980

IS : 3644-1966

IS : 3645-1966

IS : 4135-1974

IS : 3992-1982

IS : 10638-1983

IS : 4513-1968

IS : 9146-1979

IS : 10414-1982

IS : 10984-1984

GRANIOTOMY SET

Cannula, Dreu Smith	—
Catheter, metal	—
Forceps, high	—
Hook, embryotomy	—
Perforator skull	—
Scissors craniotomy	—

GENERAL INSTRUMENTS SET**Forceps:**

a) Artery, mosquito, straight and curved	IS : 3644-1966
b) Kocher's pattern	IS : 8040-1976
c) Allis, tissue	IS : 7388-1974
d) Peritonium, Bab-Cock's pattern	IS : 8584-1977
e) Hernia ring	—
f) Intestine holding, Dennis Brown	IS : 7579-1975
g) Dissecting	IS : 3643-1966
Handle for B. P. Blade	IS : 3319-1985
	{ IS : 7994-1976
Needle holder	{ IS : 10599-1983
	{ IS : 10615-1983
Needle aneurysm	IS : 8340-1977

Retractors:

a) Langenback's pattern	IS : 8855-1978
b) Cerny's pattern	IS : 8854-1978
c) Morison's pattern	—
d) Durham's pattern	—
e) Volkman's pattern	—
f) Deaver's pattern	IS : 8965-1978

Suction nozzle, for suction apparatus —

Sponge holding forceps IS : 10638-1983

Scissors:

a) Mayo's pattern straight and curved	IS : 9146-1979
b) Sharp and blunt	—
c) Wire cutting	—
d) Metzemboum's pattern	IS : 7972-1975
Towel clips	IS : 7893-1975

LEPARATOMY SET**Clamp:**

a) Payr's, crushing	IS : 7665-1975
b) Intestinal non-crushing	—

Forceps:

a) Right angle	—
b) Allis pattern	IS : 7388-1974
c) Artery	IS : 3644-1966
d) Peritonium, Bab-Cock's	IS : 8584-1977
e) Dissecting (McIntoch's)	IS : 3643-1966
f) Dissecting (Gillie's)	IS : 3643-1966

F-3. HOUSEKEEPING EQUIPMENT

Brooms, mops, etc	—
Cabinet steel	IS : 3312-1984

Chairs, metal, office type	IS : 3499 (Part 1)-1979
Meat chopper	IS : 3545-1982
Meat block	—
Mop tinger with water tank	—
Table, metal, office type	{ IS : 3498-1983
	{ IS : 8126-1976
Trolley linen/housekeeping	IS : 4455-1967
Washing machine for floor cleaning	—

F-4. HOSPITAL WORKSHOP

Blacksmith tools	} see Appendix B
Carpentary tools	
Chairs, metal, office type	IS : 3499 (Part 1)-1979
Common spares for repairs of trollies, wheel chairs and other traction equipment	—
Spray machine for painting	—
Table, metal, office type	{ IS : 3498-1983
	{ IS : 8126-1976
Trolley for general medical store	IS : 9133-1979

G. ADMINISTRATIVE ZONE**G-1. OFFICE EQUIPMENT**

Chairs, metal, office type	IS : 3499 (Part 1)-1985
Chairs, plastic moulded	—
File cabinets	IS : 3313-1983
Jugs for water	IS : 3124-1985
Office equipment:	
a) Paper weight	—
b) Pen stands	—
c) Racks	{ IS : 1883-1983
d) Stationery items	{ IS : 7070-1973
Steel cabinets	{ IS : 3312-1984
	{ IS : 4116-1976
	{ IS : 7760-1985
	IS : 3424-1985
Tumblers	—
Typewriter	—
Waste receptacles	IS : 6904-1973

G-2. CENTRAL STORES

Chairs, metal, office type	IS : 3499 (Part 1)-1985
Instruments cabinets	{ IS : 7760-1985
	{ IS : 6877-1977
Step stools	—
Steel cabinets	IS : 3312-1984
	{ IS : 1883-1983
Storage racks	{ IS : 7070-1973
	{ IS : 3498-1983
Table, metal, office type	IS : 3498-1983
Trolley for general medical store	IS : 9133-1979
Waste receptacle	IS : 6904-1973
Weighing scales	IS : 1853-1961

SECTION 5 BUILDING REQUIREMENTS

10. BUILDING REQUIREMENTS

10.1 Circulation Areas — Circulation areas, such as corridors, entrance halls, and staircases, in the hospital buildings should not be less than 30 percent of the total floor area of the building.

10.2 Floor Height — The height of all the rooms in the hospital should not be less than 3.00 m and not more than 3.65 m, measured at any point from the surface of the floor to the lowest point of the ceiling. The minimum head-room, such as under the bottom of beams, fans and lights shall be 2.50 m measured vertical under such beam, fan or light.

10.3 Room shall have, for the admission of light and air, one or more apertures, such as windows and fan lights, opening directly to the external air or into an open verandah. The minimum aggregate areas (see Note) of such opening, excluding doors inclusive of frames, shall be not less than 20 percent of the floor area in case such apertures are located in one wall and not less than 15 percent of the floor area in case such apertures are located in two opposite walls at the same sill level.

NOTE — If a window is partly fixed, the openable area shall be counted.

10.4 The architectural finishes in hospitals shall be of high quality in view of maintenance of better hygienic conditions specially in sanitary blocks. Flooring in sanitary blocks should preferably be done with marble or polished stone and dado or glazed/ceramic tile finish given on wall.

10.5 The design of building shall ensure control of noise due to walking, movement of trollies and banging of doors, etc. Expansion joint should have a non-metallic beading finish. The doors should be openable on both sides in operation theatre while inside at other places.

10.6 Sanitary Fitments — The requirements of the sanitary fitments shall be in accordance with 17.1 of IS : 10905 (Part 1)-1984*.

11. ENTRANCE AND AMBULATORY ZONE

11.1 Physical Facilities — The entrance and ambulatory zone of the hospital should have the following facilities:

- Reception and registration
- Clinics for various disciplines (examination and work-up consultation)
- Pharmacy
- Nursing station
- Casualty/Emergency
- Supporting facilities

*Recommendations for basic requirements of general hospital buildings : Part 1 Administrative and hospital services department buildings.

11.2 Reception, Registration and Entrance — The area serves as waiting area for the patients before getting registered and for the followers who wait for the return of the patients. Adequate toilet facilities may also be provided close to it.

11.3 Clinics for Various Medical Disciplines — These clinics include general medicine, general surgery, dental (optional), obstetric and gynaecology, paediatrics and family welfare. The cubicles for consultation and examination in all clinics should provide for doctor's table, chair, patient's stool, follower's seat, wash basin, examination couch and equipment for examination. The medical clinic should have the facility for cardiographic examination.

11.4 Dental Clinic (Optional) — The dental clinic may have facilities for dental hygiene, and room for patients recovery. Consultation-cum-examination room should serve as combined purpose room for consultation, examination, dental surgery and treatment.

11.5 Obstetric and Gynaecological Clinic — The clinic should include a separate reception and registration, consulting-cum-examination, treatment and clinical laboratory. The clinic should be planned close to in-patient ward units to enable them to make use of the clinics at times for ante and postnatal care. The clinic should also be at a convenient distance from other clinics in the OPD. Antenatal patients have to undergo certain formalities prior to examination by the doctors. Therefore, clinical laboratory for the purpose is essential. A toilet-cum-changing room close to treatment should also be provided.

11.6 Paediatric Clinic — The clinic should provide medical care for infants (including new born) and children up to the age of 12 years. Owing to risk of infection it is essential to isolate the clinic from other clinics. The clinic shall be provided with a separate dressing, treatment and immunisation.

11.7 Family Welfare Clinic — The clinic should provide educative, preventive, diagnostic and curative facilities for maternal, child health, school health and health education. Importance of health education is being increasingly recognized as an effective tool of preventive treatment. People visiting hospital should be informed of environmental hygiene, clean habits, need for taking preventive measures against epidemics, family planning, etc. Treatment room in this clinic should act as operating room for IUCD insertion and investigation, etc.

11.8 Pharmacy (Dispensary) — The dispensary should be located in an area conveniently accessible from all clinics. The size should be adequate to contain 5 percent of the total clinical visits to the OPD in one session at the rate of 0.8 m² per patient. The dispensary and compounding room should have multiple dispensing windows, compounding counters and shelves. The pattern of arranging the counters and shelves shall depend on the size of the room. The medicines which require cold storage and blood required for operations and emergencies may be kept in refrigerators.

11.9 Nursing Station for Ambulatory Zone — The nursing station shall be centered such that it serves all the clinics from that place. The nursing station should be spacious enough to accommodate a medicine chest, a work counter for preparing dressings, medicines, sinks, dress tables with screen in between and pedal operated bins to hold soiled material.

11.10 Casualty/Emergency — The emergency cases may be attended by OPD during OPD hours and in inpatient units afterwards.

11.11 Supporting Facilities — Various clinics under OPD required supporting facilities which include waiting spaces, medical records and injection room. A social worker room to render service to patients may also be provided.

11.11.1 Waiting Spaces — General waiting per clinic and subsidiary waiting spaces are required adjacent to each consultation and treatment room in all the clinics.

11.11.2 Medical Records — It is desirable to maintain the medical records of the out patients in continuation of registration area.

11.11.3 Injection Room — For administering injection to patients a central injection room shall be provided in conjunction with the dispensary.

12. DIAGNOSTIC ZONE

12.1 Clinical Laboratory — The clinical laboratory should be provided with 600 mm wide and 800 mm high bench of length about 2 m per technician and to full width of room for pathologist incharge of the laboratory. Each laboratory bench shall have laboratory sink with swan neck fittings, reagent shelving, gas and power point and under-counter cabinet. Top of the laboratory bench shall be of acid alkali proof material.

12.1.1 Sample Collection Room — For quick diagnosis of blood, urine, etc., a small sample collection room facility may be provided.

12.1.2 Bleeding Room — Blood taking also requires a comfortable reception with toilet. Bleeding room should be quiet and not a thoroughfare and should be divided into cubicles for privacy. A rest room shall also be provided for donors to rest and take light refreshment before returning home.

12.2 Imaging

12.2.1 General — The role of imaging department should be radio-diagnosis. Radiology is a fast developing technique and the department should be designed keeping in view the future scope of expansion. The department should be located at a place which is easily accessible to both OPD and wards and also to operation theatre department.

12.2.2 As the department deals with the high voltage, presence of moisture in the area should be avoided. Radiography is a device of making pictorial records by means of X-ray on sensitized film whereas fluoroscopy is direct visualization through the medium of X-ray.

12.2.3 Radiology and Fluoroscopy Room — The size of the room shall depend upon the type of equipment installed. The room should have a sub-waiting area with toilet facility and a change room facility, if required. Fluoroscopy room shall be completely cut off from the direct light through provisions of air-locks. The radiography units should be operated from separate control room or behind a lead mobile protection screen of 1.5 mm lead equivalent wherever necessary.

12.2.4 Film Developing and Processing Room — Film developing and dark rooms shall be provided in the department for loading, unloading, developing and processing of X-ray films. The room should be provided between a pair of radiography rooms so that new and exposed X-ray films may be easily passed through the cassette pan with 2.0 mm lead backing installed in the wall in between. The room should be completely cut off from direct light through provision of airlock. For ventilations, exhaust fans shall be provided. The room shall have a loading bench (with acid and alkali resistant top), processing tank, washing tank and a sink. Flooring for the room shall be acid and alkali proof.

12.2.5 Film Drying and Storing — There shall be some space available for film drying and storing near the room of film developing.

12.2.6 Treatment Room — Treatment room of the department shall include space for the infra X-ray and contact therapy apparatus which is of simple character, occupies little space and may not need elaborate structural requirements.

12.2.7 Ultra Sound — Ultra sound, a scanning device of imaging department, also requires a small room for use mainly by gynaecology and obstetric clinic

13. INTERMEDIATE ZONE (Inpatient nursing units)

13.1 General — Inpatients Nursing Units, that is, ward concept is fast changing due to policy of early ambulation and infact only a few patients really need to be in the bed. The basic considerations in placement wards is to ensure sufficient nursing care locating them according to the needs of treatment in respective medical discipline and checking cross infection. In this case there should be two ward units, one for male and one for female

13.2 Ward Unit — In planning a ward, the aim should be to minimize the work of the nursing staff and provide basic amenities to the patients within the Unit. The distances to be travelled by a nurse from bed areas to treatment room, pantry, etc should be kept to be minimum. The ward unit may be made of desired number of beds at the rate of 7 m² per bed and should be arranged with a minimum distance of 2.25 m between centre of two beds and a clearance of 200 mm between the bed and wall. In wards the width of doors shall not be less than 1.2 m and all wards should have dado to a height of 1.2 m. Isolation unit in the form of one single bedded rooms per ward unit may be provided to cater for certain case requiring isolation from other patients. An area of 14 m² for such room to contain a bed, bedside locker, easy chair for patient, a chair for the visitor and a built in cupboard for storing clothes is recommended. This isolation unit should have separate toilet facilities

13.3 Type of Ward — Wards may be either nightingale or rigs type. In the former, beds are arranged at right angle to the wall with the feet towards the central corridor, and in the latter 4 to 6 beds are arranged parallel to the longitudinal walls and each pair of beds facing each other. A rig type ward is recommended from socio-environmental stand point

13.4 General Ward Facilities — Each ward unit should have a set of ward ancillaries as given below

- a) Nursing station,
- b) Treatment room,
- c) Ward pantry,
- d) Ward store,
- e) Sluice room,
- f) Day space, and
- g) Sanitary

13.4.1 Nursing Station — It should be positioned in such a way that the nurse can keep a continuous watch over the patients. The room shall contain a cupboard to hold materials which might otherwise be placed in clean utility room, a drug cupboard, sink, chair, small table and space for call system points and records. Separate toilet facilities for nurses shall be provided.

13.4.2 Treatment Room — Major dressing and complicated treatments should be carried out in the treatment room to avoid the risk of cross-infection

13.4.3 Ward Pantry — For collection and distribution of meals and preparation of beverages, a ward pantry shall be provided. It should be fitted with a hot-water supply geyser, refrigerator and a hot case and should have the facilities for storing cutlery, etc

13.4.4 Ward Store — A store shall be provided for storing the weekly requirements of clothes, bed sheets, and other ward equipment

13.4.5 Sluice Room — A room shall be provided for emptying and cleaning bed pans, urine bottles, and sputum mugs, disposing of used dressing and similar material, storage of stool and urine specimen, etc

13.4.6 Day Space — For those patients who are allowed to sit and relax, a room shall be provided in the ward unit itself. It should afford an easy access to patients and supervision by the nursing staff and should be provided with easy chairs, book shelves and small tables. It may also serve as dining space

13.4.7 The sanitary requirements of an 'Intermediate Zone' are given below

Item	Number Required
Water closets	2 (for male ward) 3 (for female ward)
Ablution taps	1 for each water closet plus 1 water tap with drainage arrangement in the vicinity of water closets
Urinals	2 (for male ward)
Wash Basins	2 (each ward)
Baths	2 (for each ward)
Cleaner's sinks and sinks/slab for cleaning McIntoch	1 (for each ward)
Kitchen sinks and dishwashers	1 (for each ward in ward pantry)

14. CRITICAL ZONE (OPERATION THEATRE/LABOUR ROOM DEPARTMENT)

14.1 General — Operating suite/labour room is technically a therapeutic aid in which a team of surgeons, anaesthetists, nurses and sometime pathologist and radiologist operate upon or care for the patients. For optimum utilization of the operation/labour room units, this department, as a rule, should not be reserved rigidly for use by a particular department.

14.2 Circulation — Normally there are three types of traffic flow, namely (a) patients, (b) staff, and (c) supplies. All these should be properly channelized.

14.3 Patients — Patients are brought from the ward and should not cross the transfer area in their ward clothing which is a great source of infection. Change-over of trolleys should be effected at a place which will link up both pre-operative and post-operative rooms.

14.3.1 Preparation Room (Theatre Pack) — It should be a work room for arranging for stretchers, dressing and all other surgical items.

14.3.2 Pre-operative Room — Patients are transferred from respective ward to this room for premedication before operation. Segregation of male and female patients is to be taken care of. The room should have toilet facility separately for men and women.

14.3.3 Post Operative Resting — Immediately after the operation, the patients are kept in a room situated close to the operation theatre/labour room until such time they are found fit to be taken to their parent ward.

14.4 Staff — The doctors, nurses, technicians and assisting staff should enter from a separate route and through a set of change rooms and an air lock. They should communicate through the sterile corridor. A shoe change and gowning space near the air lock shall also be provided. Separate change rooms for doctors, nurses and technicians shall be provided, with arrangement for lockers, bathing and toilet facilities.

14.5 Supplies — All sterile goods should have a separate entry point reaching the clean corridor independently; soiled material should be taken out by the exit only. Store rooms shall be provided for storing theatre supplies, such as stretcher, trolley, sterile material, medical gas cylinders, instruments and linen.

14.6 Operation Theatre/Labour Room — Operating room/labour room should be made dust-proof, moisture proof, corners and junctions of walls, floor and ceiling should be rounded to prevent accumulation of dust and to facilitate cleaning. All doors should be two leaf type with a minimum 1.5 m width and shall have self

closing devices. Natural lighting shall be provided with large windows and general illumination by means of fluorescent tubes. The operating room/labour room should be normally arranged in pairs with scrub-up and instrument sub-sterilizing room.

14.7 Scrub-up — In this room the operating team washes and scrub-up their hands and arms, put on their sterile gown, gloves and other covers before entering the operation theatre/labour room. It should have a single leaf door with self-closing device and viewing window to communicate with the operation theatre/labour room. A pair of surgeons sinks with elbow or knee operated taps are required.

14.8 Instrument Sterilization — It is a sub-sterilizing unit attached to the operation theatre/labour room limiting its role to operating instruments on an emergency basis only. This room should be equipped with high pressure, quick sterilization apparatus. Instrument cupboard and a work bench with sinks are required.

14.9 Disposal — Theatre refuse, such as dirty linen, used instruments and other disposable/non-disposable item should be removed to a room after each operation. Non-disposable instruments after initial wash is given back to instrument sterilization unit and rest of the disposable items are disposed and destroyed. Dirty linen is sent to laundry through a separate exit. The room should be provided with sink, slop sink, work bench and draining boards.

15. SERVICES ZONE

15.1 Dietary Service (Optional) — The dietary service of a hospital is an important therapeutic tool. Properly rendered, it shall be a clinical and administrative means of stimulating rapid recovery of patients thereby shortening patients stay in the hospital. The aim in hospital catering, therefore, should be to produce well cooked, appetizing and nutritious food as economically as possible. The achievement of this objective shall depend on administrative efficiencies of the staff, planning department, layout and equipment. The hospital kitchen alone could be responsible for spreading diseases if hygienic conditions are not maintained. Use of cooking gas and electricity will definitely improve the hygienic conditions of a hospital kitchen. Good natural light and ventilation is of great importance.

15.2 Central Sterilization and Supply Department (CSSD) — Sterilization, being one of the most essential services in a hospital, requires the utmost consideration in planning. Centralization increases efficiency, results in economy in the use of equipment and ensures better supervision and control. The materials and equipments dealt in CSSD should fall under three categories: a) those related to the operation theatre department, b) common to operating and other

departments, and c) pertaining to other departments alone.

15.3 Laundry Services — Laundering of hospital linen shall satisfy two basic considerations, namely, cleanliness and disinfection. The hospital could be provided with necessary facilities for drying, pressing and storage of soiled and cleaned linens.

15.4 Civil Engineering

15.4.1 Building Maintenance — An office-cum-store should be provided to handle day to day maintenance works of the hospital building

15.4.2 Horticulture — To maintain the hospital landscaping, a room to store garden implements, seeds, etc, should be provided.

15.4.3 Water Supply — Arrangements shall be made to supply 10 000 litres of potable water per day to meet all the requirements (including laundry) except fire fighting. Storage capacity for 2 days requirements should be on the basis of the above consumption. Round the clock water supply shall be made available to all wards and departments of the hospital. Separate reserve emergency overhead tank shall be provided for operation theatre. Necessary water storage overhead tanks with pumping/boosting arrangement shall be made. The laying and distribution of the water supply system shall be according to the provisions of IS : 2065-1983*. Cold and hot water supply piping should be run in concealed form embedded into wall with full precautions to avoid any seepage

15.4.4 Drainage and Sanitation — The design, construction and maintenance of drains for waste water, surface water, sub-soiled water and sewerage shall be in accordance with IS : 1742-1983†.

15.4.4.1 The selection, installation and maintenance of sanitary appliances shall be in accordance with IS : 2064-1973‡. The design and installation of soil, waste and ventilating pipes shall be as given in IS : 5329-1983§.

15.5 Electrical Engineering

15.5.1 Sub-Station and Generation — Electric sub-station and generating set to accommodate transformer, HT/LT panel and generating set to meet the electrical requirement of the hospital shall be provided. Standby generators should be provided to generate power requirement for essential and critical areas of the hospital such as OT/LR and radiology department

*Code of practice for water supply in building (second revision)

†Code of practice for building drainage (second revision).

‡Code of practice for selection, installation and maintenance of sanitary appliances (first revision)

§Code of practice for sanitary pipe work above ground for buildings (first revision)

15.5.2 Illumination — For requirements and method for daylighting in hospital building reference may be made to IS : 2440-1975*. The level of illumination for various visual tasks shall be provided in accordance with IS : 4347-1967†. General lighting of all hospital areas except stores and lavatory block shall be fluorescent. In other areas it is recommended to be of incandescent lamps. Electrical installation except for artificial illumination, shall be in accordance with IS : 732 (Part 2)-1983‡, IS : 732 (Part 3)-1982‡, IS : 8030-1976§ and SP:30-1985||.

15.5.2.1 Shadowless light — Shadowless light (mountable type) shall be provided in operation theatres and operating delivery rooms whereas in other areas, where operation of minor nature are carried out shadowless (portable type) shall be provided.

15.5.2.2 Emergency lighting — Emergency portable light units should also be provided in the wards and departments to serve as alternative source of light in case of power failure.

15.5.2.3 Lighting protection — The lighting protective system of hospital buildings shall be in accordance with IS : 2309-1969¶.

15.5.2.4 Call bells — Call bell switches (see IS : 2268-1966** should be provided for all beds in all types of wards with indicator lights and location indicator situated in the nurses duty room of the wards.

15.5.3 Ventilation — Ventilation of hospital buildings may be achieved by either natural supply and natural exhaust of air, or natural supply and mechanical exhaust of air. The following standards of general ventilation are recommended for various areas of the hospital building based on maintenance of required oxygen, carbon-dioxide and other air quality levels and for the control of body odours when no products of combustion or other contaminants are present in the air or anaesthesia gases which are highly explosive are present:

*Guide for daylighting of buildings (second revision).

†Code of practice for hospital lighting

‡Code of practice for electrical wiring installations:

Part 2 Design and Construction (second revision)

Part 3 Inspection and testing of installations (second revision)

§Specification for luminaires for hospitals

||National electrical code: Part 3 Electrical installation in non-industrial buildings, Section 4 Medical establishment

¶Code of practice for the protection of building and allied structure against lightning (first revision)

**Specification for electric call bells and buzzers for indoor use (revised).

<i>Space to be Ventilated</i>	<i>Air changes per hour</i>
Bathrooms/toilets	6 - 12
Wards	8 - 12
Kitchens	6 - 9
Operation theatres	15 - 20
Other air-conditioned spaces	8 - 10

15.5.3.1 The general principles of natural ventilation shall be in accordance with IS : 3362-1977*. Where adequate air changes cannot be obtained by natural ventilation, mechanical ventilation either by exhaust of air or by positive ventilation (like fans and other equipment) or combination of two shall be provided. Fans and other equipments for mechanical ventilation may be located in convenient positions having regard to the intake of fresh air, accessibility for maintenance and noise control. Exhaust fans shall be provided in walls on one side or in the attic or roof. The exhausted air shall not find entry back into hospital.

15.6 Mechanical Engineering

15.6.1 Air-conditioning and Room Heating — Air-conditioning units shall be provided only for the operation theatre and neonatal unit. However, air-coolers or hot air convectors may be provided for the comforts of the patients and the staff depending upon the local needs.

15.6.2 Refrigeration — Hospital shall be provided with water coolers and refrigerators (see IS : 1474-1959†) in wards and departments, depending upon the local needs.

15.7 Other Services

15.7.1 Gas Supply

15.7.1.1 Medical gas — Medical gases comprise mainly of oxygen and nitrous oxide. The cylinder supply should be made available.

15.7.1.2 Cooking gas — For better hygienic conditions use of LPG cooking gas (liquefied petroleum gas) cylinders are recommended.

15.7.1.3 Laboratory gas — LPG (liquefied petroleum gas) cylinders should be made available for pathological lab. Alternatively, kerosine stove may be made available where gas supply is not available.

15.7.2 Telephone and Intercom — Wiring in conduits shall be provided to give telephone outlet points in room, wards and departments as desired by the authority. An intercom system may also be provided in addition to the telephones. The communication system should be adequately designed in hospitals for alerting all persons charged with

duties for patient care and all employees of the hospital who are within the building in the event of emergency.

The alerting system shall be capable of being operated from intercoms, telephones and the administrative office.

15.7.3 Fire Protection

15.7.3.1 First-aid fire-fighting equipment — Adequate first-aid, fire-fighting equipment shall be provided and installed in accordance with IS : 2190-1979*.

15.7.3.2 Fire alarm — Manually-operated fire alarm facilities shall be provided in hospital buildings which sound an audible alarm in administrative department, engineering service, offices, fire office and such other locations where gongs, sirens, whistles or bells do not disturb the patients. Distinctive visual or audible alarm shall be installed at each nurses duty room, duty station and used for fire alarm purpose only. Hospitals may also be equipped with Automatic fire alarm system conforming to IS : 2189-1976†.

15.7.4 Waste Disposal System — The hospital shall be provided with one incinerator consisting of a burning chamber and chimney.

15.7.5 Mortuary — Mortuary shall provide facilities for keeping of dead bodies and conducting autopsy. It should be so located that the dead bodies can be transported unnoticed by the general public and patients. Relatives and mourners should have direct access to the mortuary. The mortuary shall have facilities for walk in cooler, post mortem area, etc.

16. ADMINISTRATIVE ZONE

16.1 General Administration — The administration department of hospital shall essentially look after organised group of people, patients and resources in order to accomplish the task of providing best patient care. It shall have two main sections, namely, general and medical records. General section shall deal with all matters relating to overall upkeep of the hospital as well as welfare of its staff and patients. Medical records section shall function for professional work in diagnosis, treatment and care of patients.

16.2 General Stores — Hospital stores comprises stores needed for various hospital functioning and should be grouped centrally in the service complex. The area for each type of stores should be utilized to the optimum by providing built in shelves at different heights according to the type of stores. Adequate ventilations and security arrangement shall be provided. Stores should also be provided with fire fighting arrangement.

*Code of practice for selection, installation and maintenance of portable first-aid fire extinguishers (second revision).

†Code of practice for installation of automatic fire alarm system using heat sensitive type fire detectors (first revision).

*Code of practice for natural ventilation of residential buildings (first revision).

†Specification for commercial refrigerators.

APPENDIX A

(Clauses 9.1 and B-3)

LIST OF INDIAN STANDARDS ON EXTRACTION FORCEPS

IS : 4976-1987	Forceps, extraction, dental, upper anteriors, No. 1 and 2 (<i>first revision</i>)
IS : 4977-1968	Forceps, extraction, dental, lower molar, Hawk's Bill No. 1
IS : 6824-1972	Forceps, extraction, dental, lower wisdom tooth
IS : 6825-1972	Forceps, extraction, dental, upper cuspids and bicuspid
IS : 6826-1972	Forceps, extraction, dental, lower incisors, cuspids and bicuspid, left
IS : 6827-1972	Forceps, extraction, dental, upper molars, left
IS : 6828-1972	Forceps, extraction, dental, upper molars, right
IS : 6856-1972	Forceps, extraction, dental, upper root, narrow beak
IS : 6858-1972	Forceps, extraction, dental, lower incisors, cuspids and bicuspid
IS : 6859-1972	Forceps, extraction, dental, upper root, wide beak
IS : 6866-1986	Forceps, extraction, dental, upper wisdom tooth (<i>first revision</i>)
IS : 6867-1972	Forceps, extraction, dental, upper root, medium peak
IS : 6868-1972	General requirements for forceps, extraction, dental
IS : 8044-1976	Forceps, extraction, dental, lower molar, children
IS : 8045-1976	Forceps, extraction, dental, lower incisors and canines, children
IS : 8046-1976	Forceps, extraction, dental, upper incisors
IS : 8047-1976	Forceps, extraction, dental, upper molar, children

APPENDIX B

[Clause 9.1 (C-4)]

BLACKSMITH AND CARPENTRY TOOLS

IS : 402-1974	Cold chisels (<i>second revision</i>)
IS : 510-1986	Blacksmith's anvils (<i>second revision</i>)
IS : 552-1965	Smith bits (<i>revised</i>)
IS : 663-1980	Adzes (<i>second revision</i>)
IS : 703-1966	Axes (<i>revised</i>) (with Amendments No. 1 and 2)
IS : 841-1983	Steel hammers (<i>second revision</i>)
IS : 842-1968	Smith swages (<i>first revision</i>) (with Amendment No. 1)
IS : 843-1968	Smith tongs (<i>first revision</i>)
IS : 844 (Part 1)-1979	Screw drivers : Part 1 Technical supply conditions (<i>second revision</i>)
IS : 844 (Part 2)-1979	Screw drivers : Part 2 Dimension (<i>second revision</i>)
IS : 844 (Part 3)-1979	Screw drivers : Part 3 Dimensions for screw drivers for recessed head screws (<i>second revision</i>)
IS : 846-1968	Smith's flatters (<i>first revision</i>)
IS : 847-1968	Smith fullers (<i>first revision</i>)
IS : 2586-1986	Bench vices (<i>second revision</i>)
IS : 2852-1964	Carpenter's augers (with Amendments No. 1 and 2)
IS : 3587-1989	Rasps (<i>second revision</i>)
IS : 3650-1981	Combination side cutting pliers (<i>second revision</i>)
IS : 4017-1967	Carpenter's squares
IS : 4057-1987	Carpenters' metal bodied bench planes
IS : 5169-1986	Hacksaw frames (<i>first revision</i>)
IS : 6891-1973	Carpenters' auger bits
IS : 6892-1973	Blacksmiths' bick-iron
IS : 7041-1973	Carpenters, ratchet brace
IS : 7958-1976	Head vices

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